



## **RESEARCH DEPARTMENT**

**THE SERVICE AREA OF THE TEMPORARY TELEVISION TRANSMITTER  
AT SANDALE**

**Report No. K-124**

**( 1957/9 )**

**THE BRITISH BROADCASTING CORPORATION  
ENGINEERING DIVISION**

RESEARCH DEPARTMENT

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### SUMMARY

The report gives the results of a survey of the service area of the temporary television transmitter at Sandale, Cumberland. It is shown that a service is provided to many parts of Cumberland and to a small area of south-west Scotland.

### 1. INTRODUCTION

The television distribution plan provided for a low-power transmitter to serve north-west England. As a result of site tests<sup>1</sup> it was decided to raise the transmitter power from 0.5 kW to 5 kW and to construct a high-gain aerial in order that the transmission would serve south-west Scotland as well as north-west England. While the permanent station is under construction at Sandale in Cumberland, a temporary service is provided by a low-power transmitter.

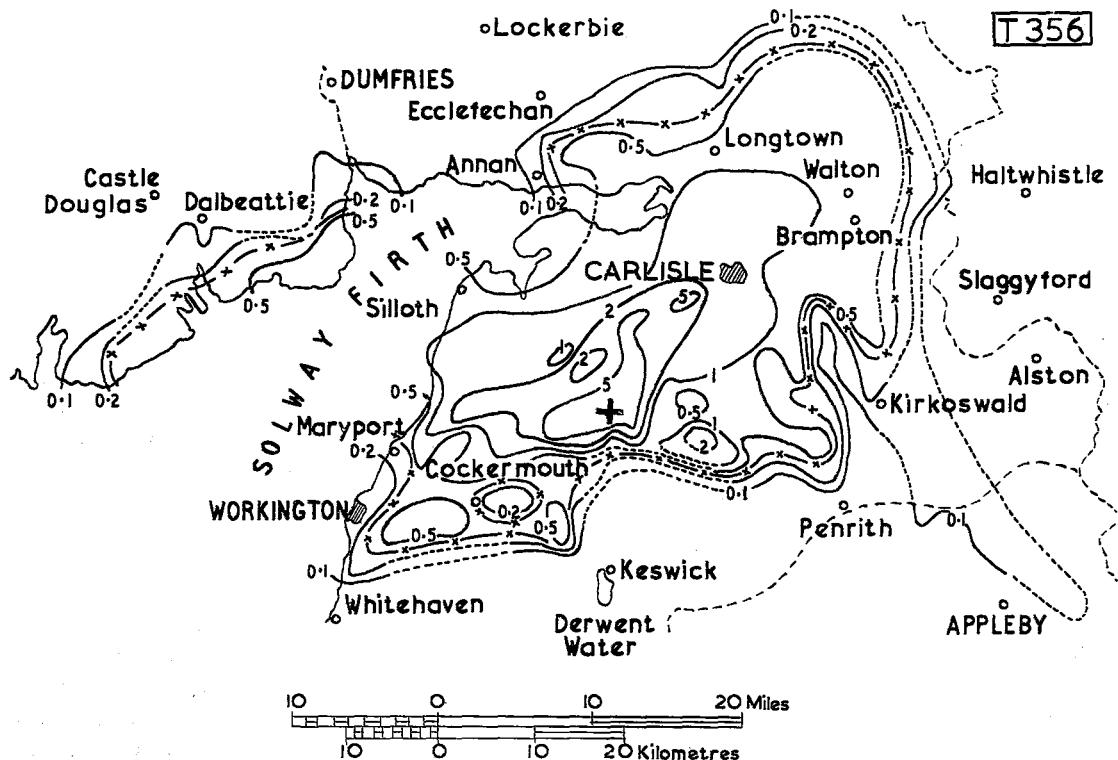
### 2. GENERAL

The temporary service is provided by a 0.5 kW transmitter driving two horizontal dipoles stacked vertically, their mid-point being 95 ft (29 m) above ground level. The effective radiated power (e.r.p.) in the direction of maximum radiation (50° and 230° E of N) is 0.6 kW.

The survey was carried out by measuring the field strength of the sound transmission with a horizontal loop aerial 12 ft (3.6 m) above ground level but all measurements have been corrected, on a linear height-gain basis, to that for a receiving aerial 30 ft (9.2 m) above ground level and to the value for peak-white vision transmission.

### 3. RESULTS

The results of the survey are presented in a field strength contour map (T.356), Fig. 1, while Table 1 gives the maximum, median and minimum field strengths in towns and villages having a population greater than 1000.



Population within	England	Scotland	Total
5mV/m	5,900	—	5,900
0.5mV/m	14,600	3,900	18,500
0.1mV/m	206,200	15,800	222,000

#### NOTE

The contours represent the field strength in mV/m 30 ft. (9.2 m) above ground exceeded at 50% of the receiving sites in a given locality. The value exceeded at 90% of the receiving may be as much as 10dB below the value indicated by the contours particularly in hilly and built-up areas

### Fig. I

#### SANDALE (Temporary)

(Measured)

Channel 4 (61.75 Mc/s)

Site Height: 1192 ft (364m) AMSL

Aerial Height: 95ft (29m) AGL

E.R.P. 0.6 kW (Max.)

Aerial: Two horizontal dipoles stacked vertically

Polarisation: Horizontal

Direction of maximum radiation 50°/230°

x-x-x-x Limit of service area free from perceptible interference from co-channel transmitters for 90% of the time based on a protection ratio of 30 dB

TABLE 1

Field Strength in mV/m at 30 ft (9.2m) AGL

Town	Max.	Median	Min.
Annan	0.22	0.11	0.04
Appleby	0.14	0.06	0.02
Aspatria	6.3	3.2	1.0
Brampton	2.2	0.53	0.2
Canonbie	0.35	0.14	0.09
Carlisle	5.0	1.2	0.22
Castle Douglas	0.12	0.07	0.04
Cleator Moor	0.03	0.02	<0.01
Cockermouth	0.89	0.28	0.1
Crossmichael	<0.01	-	-
Dalbeattie	0.2	0.08	0.04
Dalston	1.6	1.0	0.32
Dearham	0.89	0.56	0.35
Distington	0.5	0.22	0.14
Dornock	0.32	0.22	0.13
Eastriggs	0.56	0.32	0.14
Flimby	0.18	0.11	0.06
Frizington	0.04	0.03	<0.01
Gretna	0.89	0.56	0.35
Keswick	<0.1	<0.01	-
Kirkby Stephen	0.04	<0.01	-
Kirkcudbright	0.04	<0.01	-
Kirkpatrick Fleming	0.89	0.79	0.56
Langholm	0.03	<0.01	-
Lochmaben	<0.01	-	-
Lockerbie	0.05	0.03	<0.01
Longtown	1.0	0.6	0.28
Maryport	1.0	0.34	0.1
Moresby	-	0.07	-
Newton Stewart	<0.01	-	-
Parton	0.08	0.03	<0.01
Penrith	1.0	0.07	0.02
Shap	<0.01	-	-
Silloth	1.8	0.7	0.25
Skelton	0.84	0.42	0.12
Whitehaven	0.22	0.05	<0.01
Whithorn	0.1	0.06	0.04
Wigton	7.0	2.2	1.0
Wigtown	0.16	0.08	0.04
Workington	0.45	0.18	0.07

From Fig. 1 it will be seen that the 0.1 mV/m contour embraces most of Cumberland, the coastal strip of Kirkcudbrightshire and the south-east corner of Dumfriesshire, but co-channel interference is expected to reduce the service for 10% of the time to the 0.3 mV/m contour. Carlisle and Silloth are well served

while Maryport, Workington, Cockermouth and Brampton have a fair to poor service. Whitehaven and Penrith are both outside the service area.

Table 2, compiled by Engineering Information Department, gives the population within the 5°0, 0°5 and 0°1 mV/m contours.

TABLE 2

Population within	England	Scotland	Total
5°0 mV/m	5,900	-	5,900
0°5 mV/m	114,600	3,900	118,500
0°1 mV/m	206,200	15,800	222,000

#### 4. CONCLUSIONS

The temporary Sandale television transmitter serves a large part of Cumberland and a small area of Dumfriesshire and Kirkcudbrightshire in Scotland.

#### 5. REFERENCE

1. Research Department Report No. K-108 (1956/8), "Television Transmitters—Site Tests in Cumberland".